

Instructor's Manual to Accompany **Organizational Behavior 7/e** by Steven L. McShane and Mary Ann Von Glinow



Chapter 7: Decision Making and Creativity

Prepared by:
Steven L. McShane, The University of Western Australia





Decision Making and Creativity

LEARNING OBJECTIVES

After reading this chapter, students should be able to:

1. Describe the rational choice paradigm of decision making.
2. Explain why people differ from the rational choice paradigm when identifying problems/opportunities, evaluating/choosing alternatives, and evaluating decision outcomes.
3. Discuss the roles of emotions and intuition in decision making.
4. Describe employee characteristics, workplace conditions, and specific activities that support creativity.
5. Describe the benefits of employee involvement and identify four contingencies that affect the optimal level of employee involvement.



CHAPTER GLOSSARY

anchoring and adjustment heuristic -- A natural tendency for people to be influenced by an initial anchor point, such that they do not sufficiently move away from that point as new information is provided.

availability heuristic -- A natural tendency to assign higher probabilities to objects or events that are easier to recall from memory, even though ease of recall is also affected by nonprobability factors (e.g., emotional response, recent events).

bounded rationality -- The view that people are bounded in their decision-making capabilities, including access to limited information, limited information processing, and tendency toward satisficing rather than maximizing when making choices.

creativity -- The development of original ideas that make a socially recognized contribution.

decision making -- The conscious process of making choices among alternatives with the intention of moving toward some desired state of affairs.

divergent thinking -- Reframing a problem in a unique way and generating different approaches to the issue.

employee involvement -- The degree to which employees influence how their work is organized and carried out.

escalation of commitment -- The tendency to repeat an apparently bad decision or allocate more resources to a failing course of action.

implicit favorite -- A preferred alternative that the decision maker uses repeatedly as a comparison with other choices.

intuition -- The ability to know when a problem or opportunity exists and to select the best course of action without conscious reasoning.

prospect theory effect -- A natural tendency to feel more dissatisfaction from losing a particular amount than satisfaction from gaining an equal amount.

rational choice paradigm -- The view in decision making that people should — and typically do — use logic and all available information to choose the alternative with the highest value.

representativeness heuristic -- A natural tendency to evaluate probabilities of events or objects by the degree to which they resemble (are representative of) other events or objects rather than on objective probability information.

satisficing -- Selecting an alternative that is satisfactory or “good enough,” rather than the alternative with the highest value (maximization).

scenario planning -- A systematic process of thinking about alternative futures and what the organization should do to anticipate and react to those environments.

subjective expected utility -- The probability (expectancy) of satisfaction (utility) resulting from choosing a specific alternative in a decision.

CHAPTER SUMMARY BY LEARNING OBJECTIVE

7-1 Describe the rational choice paradigm in decision making.

Decision making is a conscious process of making choices among one or more alternatives with the intention of moving toward some desired state of affairs. The rational choice paradigm relies on subjective expected utility to identify the best choice. It also follows the logical process of identifying problems and opportunities, choosing the best decision style, developing alternative solutions, choosing the best solution, implementing the selected alternative, and evaluating decision outcomes.

7-2 Explain why people differ from the rational choice paradigm when identifying problems/opportunities, evaluating/choosing alternatives, and evaluating decision outcomes.

Stakeholder framing, perceptual defense, mental models, decisive leadership, and solution-oriented focus affect our ability to objectively identify problems and opportunities. We can minimize these challenges by being aware of the human limitations and discussing the situation with colleagues.

Evaluating and choosing alternatives is often challenging because organizational goals are ambiguous or in conflict, human information processing is incomplete and subjective, and people tend to satisfice rather than maximize. Decision makers also short-circuit the evaluation process when faced with an opportunity rather than a problem. People generally make better choices by systematically evaluating alternatives. Scenario planning can help make future decisions without the pressure and emotions that occur during real emergencies.

Confirmation bias and escalation of commitment make it difficult to evaluate decision outcomes accurately. Escalation is mainly caused by the self-justification effect, self-enhancement effect, the prospect theory effect, and sunk costs effect. These problems are minimized by separating decision choosers from decision evaluators, establishing a preset level at which the decision is abandoned or re-evaluated, relying on more systematic and clear feedback about the project's success, and involving several people in decision making.

7-3 Discuss the roles of emotions and intuition in decision making.

Emotions shape our preferences for alternatives and the process we follow to evaluate alternatives. We also listen in to our emotions for guidance when making decisions. This latter activity relates to intuition – the ability to know when a problem or opportunity exists and to select the best course of action without conscious reasoning. Intuition is both an emotional experience and a rapid, nonconscious, analytic process that involves pattern matching and action scripts.

7-4 Describe employee characteristics, workplace conditions, and specific activities that support creativity.

Creativity is the development of original ideas that make a socially recognized contribution. The four creativity stages are preparation, incubation, illumination, and verification. Incubation assists divergent thinking, which involves reframing the problem in a unique way and generating different approaches to the issue.

Four of the main features of creative people are intelligence, persistence, expertise, and independent imagination. Creativity is also strengthened for everyone when the work environment supports a learning orientation, the job has high intrinsic motivation, the organization provides a reasonable level of job security, and project leaders provide appropriate goals, time pressure, and resources. Three types of activities that encourage creativity are redefining the problem, associative play, and cross-pollination.

7-5 Describe the benefits of employee involvement and identify four contingencies that affect the optimal level of employee involvement.

Employee involvement refers to the degree that employees influence how their work is organized and carried out. The level of participation may range from an employee providing specific information to management without knowing the problem or issue, to complete involvement in all phases of the decision process. Employee involvement may lead to higher decision quality and commitment, but several contingencies need to be considered, including the decision structure, source of decision knowledge, decision commitment, and risk of conflict.

LECTURE OUTLINE (WITH POWERPOINT® SLIDES)



Decision Making and Creativity

Decision Making and Creativity

Slide 1

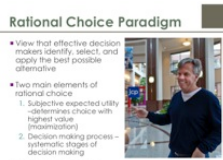


Decision Making Blunders at JCPenney

Slide 2

Decision Making Blunders at JCPenney

Ron Johnson and his executive team at JCPenney made a series of decision blunders due to their overconfident diagnosis of the retailer's problems and preconceived (Apple-centric) solutions to those problems.



Rational Choice Paradigm

Slide 3

Rational Choice Paradigm

Rational choice paradigm – the view that people should, and typically do, use logic and all available information to choose the alternative with the highest value

Key elements:

- Subjective expected utility – the probability (expectation) of satisfaction (utility) resulting from choosing a specific alternative in a decision – used to determine choice that maximizes
- Decision making process – follows the systematic process and application of stages of decision making

Rational Choice Decision-making Process



Rational Choice Decision Process

Slide 4

Rational Choice Decision Making Process

The rational choice paradigm assumes that decision makers follow the systematic process illustrated

1. Identify problem/opportunity (symptom vs. problem)
 - Problem – gap between “what is” and “what ought to be”
 - Opportunity-- deviation between current expectations and potentially better situation(s) not previously expected
 - Symptom – indicators and outcomes of fundamental root causes
2. Choose the best decision process
 - Programmed decisions – follow standard operating procedures i.e. they have been resolved in the past
 - Nonprogrammed decisions – require all steps in the decision model because the problems are new, complex, or ill-defined
3. Develop alternative solutions – search for ready-made solutions first, then develop/modify custom-made solution
4. Choose the best alternative – alternative with the highest subjective expected utility
5. Implement the selected alternative – assumed to occur easily
6. Evaluate decision outcomes – determines whether the gap between “what is” and “what ought to be” has narrowed

Problem Identification Challenges

- Problems/opportunities are constructed from ambiguous information, not “given” to us
- Influenced by cognitive and emotional biases
- Five problem identification challenges
 - Stakeholder framing
 - Decisive leadership
 - Solution-focused problems
 - Perceptual defense
 - Mental models

Problem Identification Challenges

Slide 5

Problem Identification Challenges

Problems and opportunities are not “given” -- they are conclusions formed from ambiguous and conflicting information

Five Problem Identification Challenges:

- Stakeholder framing – stakeholders frame information so decision makers perceive a problem opportunity, or no issue
- Decisive leadership – leaders rewarded for decisiveness, so they conclude problems or opportunities without careful assessment
- Solution-focused problems – solutions are defined as problems (e.g. “the problem poor training”) -- feels comfortable having a solution
- Perceptual defense – blocking out bad news as a coping mechanism (fail to see information that threatens self-concept)
- Mental models – existing mental models blind us from seeing unique problems or opportunities

Identifying Problems Effectively

- Be aware of perceptual and diagnostic limitations
- Fight against pressure to look decisive
- Maintain "divine discontent" (aversion to complacency)
- Discuss the situation with colleagues – see different perspectives

Identifying Problems Effectively

Slide 6

Identifying Problems Effectively

1. Be aware of perceptual and diagnostic limitations
2. Resist temptation of looking decisive when more thoughtful examination of the situation should occur
3. Create a norm of "divine discontent" – avoid being complacent with the status quo and adopt an aversion to complacency
4. Discuss the situation with colleagues to discover blind spots and see different perspectives

Making Choices: Rational vs OB Observations



Making Choices: Rational vs OB Views

Slide 7

Making Choices: Rational vs OB Views

Bounded rationality (Herb Simon) – people process limited and imperfect information, rarely select the best choice

Problems with goals

- Rational – goals are clear, compatible, and agreed-upon
- OB – goals are ambiguous, conflicting, lack full support

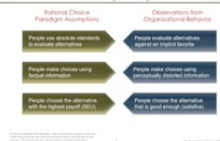
Problems with information processing

- Rational – people can process all information about all alternatives and their outcomes
- OB – people have limited information processing abilities

Problems with evaluation timing

- Rational – choices evaluated simultaneously
- OB – choices evaluated sequentially

Making Choices: Rational vs OB Observations (con't)



Making Choices: Rational vs OB Views

Slide 8

Making Choices: Rational vs OB (con't)

Problems with evaluation standards

- Rational – people use absolute standards to evaluate alternatives
- OB – people evaluate against an implicit favorite

Problems with information quality

- Rational – choices are made using factual information
- OB – choices are made using distorted information

Problems with decision objective

- Rational – people maximize i.e. choose alternative with the highest payoff (subjective expected utility)
- OB – people satisfice i.e. select "good enough" alternative

Biased Decision Heuristics

- **Anchoring and adjustment**
 - we are anchored by and don't move far from an initial anchor point (e.g. opening bid)
- **Availability heuristic**
 - we estimate probabilities by how easily we can recall the event, even though other factors influence ease of recall
- **Representativeness heuristic**
 - we estimate probability of something by its similarity to something known rather than by more precise statistics

Biased Decision
Heuristics
Slide 9

Biased Decision Heuristics

People have built-in decision heuristics that bias evaluation of alternatives

Anchoring and adjustment heuristic

- We are influenced by an initial anchor point, and don't move away from that point much as new information is provided
 - e.g. high price of an initial contract tender causes negotiations to focus around that price even though excessive

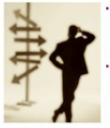
Availability heuristic

- Tendency to estimate the probability of something occurring by how easily we can recall those events
 - e.g. we easily remember emotional events (e.g. shark attack) so we overestimate how often these emotional events occur

Representative heuristic

- Tendency to estimate probability of something based on its similarity to something known than by more precise statistics
 - e.g. 20% of students are in engineering and 80% are business majors, yet we believe one student is in engineering because s/he resembles a typical engineering student

Problems with Maximization



- People don't try to select choice with highest value (maximization) because:
 - Alternatives appear sequentially, not all at once
 - People tend to overestimate the process volume of information
- How decision makers respond to maximization problems:
 - Satisficing – choose the “good enough” alternative
 - Oversimplifying decision calculations (e.g., few evaluation criteria)
 - Avoiding the decision

Problems with Maximization

Slide 10

Problems with Maximization

People don't choose the best alternative (maximization) because:

1. Alternatives appear over time and may not be available later
 - ➔ we need to decide now, not when future choices are available
2. People lack motivation and ability to process huge amounts of information required for maximization
 - ➔ people are cognitive misers

How decision makers respond to problems with maximization

1. Satisficing
 - ➔ choose the first alternative that exceeds a “good enough” standard
 - ➔ much less cognitive taxing than maximization
 - ➔ we rely on implicit favorite to determine if alternatives exceed our current preference
2. Oversimplify decision calculations
 - ➔ use easily identifiable factors (color, size) to remove several alternatives from further consideration
 - ➔ use few evaluation criteria rather than full list of factors
3. Avoid making the decision
 - ➔ When presented with many choices, people often choose the least cognitively challenging alternative – no decision at all
 - ➔ Occurs even when there are clear benefits of selecting any alternative (such as joining a company retirement plan)

Emotions and Making Choices

- Emotions form preferences before we consciously evaluate those choices
- Moods and emotions influence how well we follow the decision process
- We “listen in” on our emotions and use that information to make choices

Emotions and Making Choices

Slide 11

Emotions and Making Choices

How emotions affect the evaluation of alternatives:

1. Emotions form preferences before cognition inferences
 - Emotional marker process determines our preferences for each alternative before we consciously evaluate those alternatives
2. Emotions affect the decision evaluation process
 - moods and emotions affect how carefully we evaluate alternatives
 - e.g. we may pay more attention to details when in a negative mood, tend to skim over evaluating when in a good mood
3. Emotions serve as information
 - We “listen in” on our emotions for guidance when making choices
 - e.g. visualize using product, pay attention to resulting emotion

Intuitive Decision Making

- Ability to know when a problem or opportunity exists and select the best course of action without conscious reasoning
- Intuition as emotional experience
 - Gut feelings are emotional signals
 - Not all emotional signals are intuition
- Intuition as rapid nonconscious analysis
 - Uses action scripts

Intuitive Decision Making

Slide 12

Intuitive Decision Making

Intuition – ability to know when a problem or opportunity exists and to select the best course of action without conscious reasoning

Intuition is an emotional experience

- Gut feelings are emotional signals
- Not all emotional signals are intuition

Intuition as rapid unconscious analysis

- Uses action scripts – programmed decision routines that shorten the decision making process

Choosing Alternatives Better

1. Systematically evaluate alternatives against relevant factors
2. Be aware of effects of emotions on decision preferences and evaluation process
3. Scenario planning

Choosing Alternatives Better

Slide 13

Choosing Alternatives Better

1. Systematically evaluate alternatives against relevant factors
2. Revisit decisions later, when in a different mood state
3. Use scenario planning – a disciplined method for imagining possible futures

Decision Evaluation Problems

- Confirmation bias
 - inflate quality of the selected option; forget or downplay rejected alternatives
- Escalation of commitment -- repeating or further investing in an apparently bad decision
 - Caused by
 - self-justification effect
 - self-enhancement effect
 - prospect theory effect
 - sunk costs effect

Decision Evaluation Problems

Slide 14

Decision Evaluation Problems

Confirmation bias -- unwitting selectivity in the acquisition and use of evidence

- Tendency to inflate quality of the selected option; forget or downplay rejected alternatives
- Gives people an excessively optimistic evaluation of their decisions

Escalation of commitment -- tendency to repeat or further invest in an apparently bad decision

Four causes of escalation of commitment:

1. Self-justification effect

- ➔ continue to invest in a failing project to maintain impression that the project is still worthy -- ending project implies incompetence

2. Self-enhancement effect

- ➔ natural tendency to think we are above average (lucky, competent)
- ➔ results in (a) ignoring bad news about the decision and (b) overestimating chance that investing more will correct the problem

3. Prospect theory effect

- ➔ we experience stronger negative emotions when losing something of value than positive emotions when gaining something of equal value
- ➔ stopping a project hurts more than spending more on it

4. Sunk costs effect

- ➔ people motivated to invest more in projects with large resources already invested
- ➔ but future investments should NOT consider size of previous investment in the project, only the expected future gains
- ➔ past investment includes time -- people motivated to spend more time when much time has been devoted to the project already

Evaluating Decisions Better

1. Separate decision choosers from evaluators
2. Establish a preset level to abandon the project
3. Find sources of systematic and clear feedback
4. Involve several people in the evaluation process

Evaluating Decisions Better

Slide 15

Evaluating Decisions Better

1. Separate decision choosers from decision evaluators – minimizes self-justification effect

2. Stop loss – publicly establish a preset level at which the decision is abandoned or re-evaluated

3. Find sources of systematic and clear feedback

4. Involve several people in the decision – may notice problems sooner than when someone is working alone

Tangible Creativity

Alex Beim, founder and chief creative technologist of Tangible Interaction Design in Vancouver, Canada, relies on creative thinking to invent enticing interactive displays, such as the zygotes at the Olympic Games.

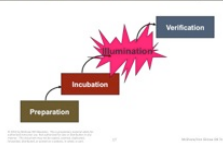


Tangible Creativity
Slide 16

Tangible Creativity

Alex Beim, founder and chief creative technologist of Tangible Interaction Design in Vancouver, relies on creative thinking to invent enticing interactive displays, such as the zygotes at the Vancouver Olympics.

Creative Process Model



Creative Process Model
Slide 17

Creative Process Model

1. Preparation

- Investigating the problem or opportunity in many ways -- learning about the issue

2. Incubation

- Period of reflective thought -- put the problem aside, maintain low level of awareness
- Assists divergent thinking – reframing a problem in a unique way and generating different approaches to the issue
- Contrasts with convergent thinking – calculating the conventionally accepted “right answer” to a logical problem

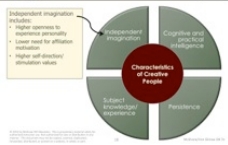
3. Illumination

- The experience of suddenly becoming aware of a unique idea
- begins with “fringe” awareness (barely perceptible)
- short-term memory -- easily forgotten, so need to document

4. Verification

- Logical evaluation, experimentation, and further creative insight

Characteristics of Creative People



Characteristics of Creative People

Slide 18

Characteristics of Creative People

Cognitive and practical intelligence

- Cognitive intelligence to synthesize/analyze information
- Practical intelligence – assess potential usefulness of ideas

Persistence

- Based on: (a) higher need for achievement, (b) strong motivation from the task itself, and (c) moderate or high degree of self-esteem

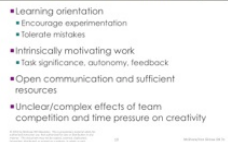
Knowledge and experience

- Expertise/subject matter knowledge – but strong knowledge may form strong mental models that reduce divergent thinking

Independent imagination (cluster of personality traits and values)

- Cluster of personality traits and values
- Consists of: (a) high openness to experience (personality), moderately low need for affiliation (drive/motive), higher self-direction and stimulation (values)

Creative Work Environments



Creative Work Environments

Slide 19

Creative Work Environments

Learning orientation

- Encourage experimentation
- Tolerate mistakes as part of the creative process

Intrinsically motivating work

- Motivation from the job itself -- task significance, autonomy, challenging but within employee's competencies

Open communication and sufficient resources

- Includes degree of job security
- Providing nontraditional workspaces e.g. unique building design

Note: It isn't clear how much pressure should be exerted on employees to produce creative ideas or the effect of co-worker support/co-worker competition



Creative Activities
Slide 20

Creativity Activities

Redefine the problem

- Revisit abandoned projects—might be seen in new ways
- People unfamiliar with issue explore the problem (fresh eyes)

Associative play

- Impromptu storytelling and acting
- Artistic activities
- Morphological analysis – listing different dimensions of a system and the elements of each dimension and then looking at each combination

Cross-Pollination

- People from different parts of the organization exchange ideas or are brought into the team
- Informal social interaction



Brasilata, The Ideas Company
Slide 21

Brasilata, The Ideas Company

Brasilata has become one of the most innovative and productive manufacturing businesses in Brazil by involving employees in company decisions.



Levels of Employee Involvement
Slide 22

Levels of Employee Involvement

The degree to which employees influence how their work is organized and carried out

Different levels of involvement (lowest to highest)

1. Employees individually asked for specific information but the problem is not described to them.
2. Problem is described and employees are asked individually or collectively for information relating to that problem.
3. Problem is described to employees, who are collectively given responsibility for developing recommendations
4. Employees responsible for entire decision-making process -- identify the problem, discover alternative solutions, choose the best alternative, implement choice

Employee Involvement Model



Employee Involvement Model

Slide 23

Employee Involvement Model

Several potential benefits of involvement, but only under specific circumstances.

1. Better problem identification
 - Recognizing problems more quickly and defining them more accurately
2. Synergy produces more/better solutions
 - Team members create synergy by pooling their knowledge to form new alternatives
3. Better at picking the best choice
 - Decision is reviewed by people with diverse perspectives and a broader representation of values
4. Higher decision commitment
 - Increases sense of personal responsibility for decision's success and representation of interests

Contingencies of Involvement



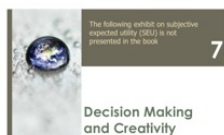
Contingencies of Involvement

Slide 24

Contingencies of Involvement

Higher employee involvement is better when:

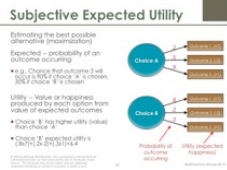
1. Decision structure
 - Problem is new and/or complex i.e. nonprogrammed decision
2. Source of decision knowledge
 - The leader lacks knowledge and employees have information
3. Decision commitment
 - Employees unlikely to accept decision without their involvement
4. Risk of conflict (two conflict risks)
 - (a) Employee norms support the organization's goals
 - (b) Employees are likely to agree on the solution



Decision Making and Creativity

Slide 25

Decision Making and Creativity



Subjective Expected Utility

Slide 26

Subjective Expected Utility

Subjective expected utility: estimating the best possible alternative (maximization)

- Depends on probabilities of outcomes and value (valence) of those outcomes

Expected – probability of an outcome occurring

- As illustrated: Chance that outcome 3 will occur is 90% if choice 'A' is chosen, 30% if choice 'B' is chosen
- e.g., 90% probability that applicant 'A' will quit within one year; only 30% chance that applicant 'B' will quit within one year

Utility – value or happiness produced by each option from value of expected outcomes

- As illustrated: you believe Choice 'B' has higher utility (i.e., will produce greater happiness) than will Choice 'A'

Choice 'B' expected utility is
 $(.8 \times 7) + (.2 \times -2) + (.3 \times 1) = 6.4$

Choice 'A' expected utility is
 $(.5 \times 7) + (.5 \times -2) + (.9 \times 1) = 1.3$

Note: Value (valence) of outcomes remain the same for both choices e.g. you value good wireless reception (positive outcome) to the same degree no matter which tablet (iPad, etc.) you are considering buying



Solutions to Creativity Brainbusters

Slides 27-32

Solutions to Creativity Brainbusters

This PowerPoint file includes a set of slides showing solutions to the creativity brainbusters activity



SOLUTIONS TO CRITICAL THINKING QUESTIONS

1. **A management consultant is hired by a manufacturing firm to determine the best site for its next production facility. The consultant has had several meetings with the company's senior executives regarding the factors to consider when making the recommendation. Discuss the decision-making problems that might prevent the consultant from choosing the best site location.**

This question directly relates to the section on evaluating and choosing solutions. The consultant is asked to determine the best site location, and this process is subject to the problems presented below. Each problem should include an example relating to this incident.

Problems with Goals. The consultant likely discovered that executives at the manufacturing firm are not fully agreed on the priority of factors to consider when choosing a site. They may have conflicting goals – such as a site that is conveniently located yet low cost. Some of the goals will be ambiguous, such as “convenience.”

Problems with Information Processing. The consultant is subject to the same human limitations as other people. The consultant's personal biases may cause some information to be screened out or viewed in an unrealistically favorable light. The consultant is unable to evaluate all possible sites (there must be thousands of them!), let alone consider every factor for each site. Finally, the consultant probably compares sites against an implicit favorite, rather than look at all prospective sites simultaneously.

Problems with Maximization. The consultant's recommendation probably won't be the absolutely best site. Given the volume of information and the sequential decision process, the recommended site is probably one that is “good enough.” In other words, the consultant will satisfice.

2. **You have been asked to personally recommend a new travel agency to handle all airfare, accommodation, and related travel needs for your organization of 500 staff. One of your colleagues, who is responsible for the company's economic planning, suggests that the best travel agent could be selected mathematically by inputting the relevant factors for each agency and the weight (importance) of each factor. What decision-making approach is your colleague recommending? Is this recommendation a good idea in this situation? Why or why not?**

The rational choice paradigm approach is being recommended for this decision.

The idea that relevant factors should be identified and weighted is good. At least this would help us think about which factors are most important for the company. These could include such factors as, cost, speed of service, quality of service, etc.

However, his suggestion that the best decision could be arrived at mathematically is somewhat misleading. While the rational choice paradigm may rest on the assumption that people evaluate and choose the best alternatives logically, that is not borne out by empirical evidence.

OB experts have demonstrated that decision-makers may not choose the best alternatives for a variety of reasons. For example, decision makers have limited information processing abilities, evaluate alternatives sequentially and against implicit favorites, and are influenced by perceptual errors, biases and emotions. Moreover, when it comes to making a final choice their decisions are often made on the basis of satisficing rather than maximization.

- 3. Intuition is both an emotional experience and a nonconscious analytic process. One problem, however, is that not all emotions signaling that there is a problem or opportunity represent intuition. Explain how we would know if our “gut feelings” are intuition or not, and if not intuition, suggest what might be causing them.**

All gut feelings are conscious awareness of emotional experiences. However, not all emotional experiences constitute intuition.

Intuition involves using well established mental models and templates (derived from tacit knowledge we have acquired) to compare what fits or doesn't fit in an observable situation. The unconscious comparison allows us to anticipate future events. Intuition also relies on action scripts, which are preprogrammed routines for responding to matched or mismatched patterns. These scripts allow us to act without having to consciously evaluate the alternatives.

Gut feelings, on the other hand, are not based on well-grounded templates or mental models. Therefore, gut feelings would be more likely to occur in situations where one has limited experience. The cause of these feelings would be due to some emotional reaction to a given situation.

- 4. A developer received financial backing for a new business financial center along a derelict section of the waterfront, a few miles from the current downtown area of a large European city. The idea was to build several high-rise structures, attract large businesses to those sites, and have the city extend transportation systems out to the new center. Over the next decade, the developer believed that others would build in the area, thereby attracting the regional or national offices of many financial institutions. Interest from potential business tenants was much lower than initially predicted and the city did not build transportation systems as quickly as expected. Still, the builder proceeded with the original plans. Only after financial support was curtailed did the developer reconsider the project. Using your knowledge of escalation of commitment, discuss three possible reasons why the developer was motivated to continue with the project.**

Escalation of commitment occurs when an individual repeats a bad decision or continues to allocate resources to a failing cause of action. This incident is a variation of the Canary Wharf project in London, which nearly put developer Olympia and York into bankruptcy. It is unfair to say that the Canary Wharf event was due to escalation of commitment (we don't have enough information about the internal decision making), but the incident described here certainly provides a setting for discussion of this topic. There are four main causes of escalation

Self-justification effect. Canceling the development may have suggested that the developer (who originally proposed and championed the project) made a bad decision whereas continuing the development would be vote of confidence towards his/her leadership ability. The developer also may have continued the project if he/she had linked it to the company's future success. To reverse this position would convey an image of inconsistent leadership.

Self-enhancement effect. The developer likely screened out or neutralized negative information because of a self-perception of being above average. In addition, the project was clearly high risk (redesigning a significant portion of the city), so the developer seems to exhibit self-enhancement in the form of perceiving a higher probability of success in spite of these risks. In other words, decision makers falsely believe that luck is on their side, so they invest more in a losing course of action.

Prospect theory effect. The discomfort associated with losing money on this project may have outweighed the desire for gains. In other words, knowing that stopping the project would mean certain loss, he/she was willing to go to great lengths to avoid this, even it meant a smaller pay off in the end.

Sunk costs effect. Discontinuing the project would almost certainly have high financial costs for the developer, such as past expenditures and canceling contracts. The amount of investment “sunk” into the project would have motivated the developer to continue investing further even if those investment resources would have been more productive elsewhere.

5. **Ancient Book Company has a problem with new book projects. Even when others are aware that a book is far behind schedule and may engender little public interest, sponsoring editors are reluctant to terminate contracts with authors whom they have signed. The result is that editors invest more time with these projects than on more fruitful projects. As a form of escalation of commitment, describe two methods that Ancient Book Company can use to minimize this problem.**

The textbook identifies four strategies to improve decision evaluation:

Separate chooser from implementers. The most effective strategy is to separate decision choosers from decision implementers. This minimizes the problem of saving face because the person responsible for implementation and evaluation would not be concerned about saving face if the project is cancelled.

Establish a stop-loss decision rule. Another way to minimize escalation of commitment establish a preset level at which the decision is abandoned or reevaluated. The problem with this solution is that conditions are often so complex that it is difficult to identify an appropriate point to abandon a project. However, this approach may work if a stopping point can be determined and it is established by someone other than the decision maker.

Find systematic and clear feedback. The clearer the feedback, the more difficult it is to deny that the project has problems. Unfortunately, this solution is rarely available because many decisions have only ambiguous feedback.

Involve more than one person in the initial decision. It may be less likely two or more people would be similarly attached personally with the decision. However, this action is also likely the least effective among these four.

6. **A fresh graduate is offered a job by an employer she admires even before she can start her job search. The student thinks it is an opportunity and jumps to it. Do you think there is an effect of emotions in her decision making?**

The rational choice paradigm assumes that decision makers follow the systematic process. However, emotions affect the evaluation of alternatives. Emotional marker process determines our preferences for each alternative before we consciously think about those alternatives. The student probably has done this in the given situation. Emotions also influence the process of evaluation. Therefore, the student probably has been quick to choose an employer she admires here and has been biased towards other alternatives if any. Emotions also serve as information when we evaluate alternatives. Hence, the student perhaps was swayed by her emotional reaction, however, she still seems to be informed by reasons of why she admired the employer in the first place.

7. **Think of a time when you experienced the creative process. Maybe you woke up with a brilliant (but usually sketchy and incomplete) idea, or you solved a baffling problem while doing something else. Describe this incident to your class and explain how the experience followed the creative process.**

For this question, students should be encouraged to think about a recent project they may completed and done well (e.g. major research project). They may initially recall the event in a general sense, but should strive to divide it according to the four stages outlined in the creative process model

The insight stage should be particularly relevant since it is the point at which one idea may come while thinking or doing something else. Students should try to remember how the idea came to them and how they documented and tested it. Once done, they may be able to also recall the previous stage (incubation).

8. **Two characteristics of creative people are that they have relevant experience and are persistent in their quest. Does this mean that people with the most experience and the highest need for achievement are the most creative? Explain your answer.**

The answer is probably "No". The textbook states that there is a dilemma regarding experience. On the one hand, people need plenty of experience to be familiar with the issues. The literature on creativity suggests that it may take several years of experience before a person has reached creative potential.

The dilemma is that the longer a person is in one field of study, the more he/she develops a mental model that stifles creativity. Some companies prefer people with no experience in an industry so they are more creative. These two points are not exactly contradictory – a person may be new to an industry but has many years of

experience in a particular skill or trade. However, the issue does suggest that there is an optimal level of experience before mental models undermine creative potential.

It is less certain whether creativity continues to increase with need for achievement. The textbook explains that need for achievement makes creative people more persistent, which is necessary in the face of short-term failures and doubts from others. Would a very strong need for achievement undermine creative potential? This is a matter for debate. Most likely too much need for achievement will create blind drive which can prevent people from seeing alternative strategies and the obvious inappropriateness of existing routes.

9. Employee involvement applies just as well to the classroom as to the office or factory floor. Explain how student involvement in classroom decisions typically made by the instructor alone might improve decision quality. What potential problems may occur in this process?

Problem identification. Because students have a different perspective than the instructor, their involvement might help identify issues or problems the instructor was unaware of. This could lead to improvements in the quality of the learning experience.

Generating alternatives. Student involvement could potential improve the number and quality of solutions generated. This typically happens when more people look for solutions, because individuals have different perspectives.

Better solutions. The likelihood of choosing the best solution, from the list of alternatives generated, would be increased due to diverse perspectives and values.

Increased commitment. When students are involved in identifying the issues, generating alternative solutions, and choosing a solution they may also feel more committed to the decision taken.

Increased perception of fairness. Being involved in the process, may also promote a sense of fairness among students.

To avoid problems with this process, limits should be placed on the extent of participation, and the number of issues requiring student involvement. For example, the determination of grades should be left up to the instructor. The types of questions and weightings of exams should also be predetermined.

The instructor would have to make sure all students are equally involved to avoid a small influential and vocal group of students from dominating the others.

Lastly, the instructor should be mindful that increasing student involvement requires more time, which may in turn reduce teaching time.



CASE INCIDENTS: EMPLOYEE INVOLVEMENT INCIDENTS

Scenario Synopsis

These four scenarios provide an excellent opportunity for students to discuss the conditions under which various levels of employee involvement should be applied. To decide the best level, students should consider the benefits of and problems with employee involvement described in this chapter.

Suggested Answers to Case Questions

The five levels of involvement identified in each of the three scenarios is as follows:

Decide alone. Use your personal knowledge and insight to complete the entire decision process without conferring with anyone else.

Receive information from individuals. Ask specific individuals for information. They do not make recommendations and might not even know what the problem is about.

Consult with individuals. Describe the problem to selected individuals and seek both their information and recommendations. The final decision is made by you, and you may or may not take the advice from these others into account.

Consult with the team. You bring together a team of people (all department staff or a representation of them if the department is large), who are told about the problem and provide their ideas and recommendations. You make the final decision, which may or may not reflect the team's information.

Facilitate the team's decision. The entire decision-making process is handed over to a team or committee of subordinates. You serve only as a facilitator to guide the decision process and keep everyone on track. The team identifies the problem, discovers alternative solutions, chooses the best alternative, and implements their choice.

Scenario 1: The Productivity Dividend Decision

Situation: As head of the transmission/distribution group (TD group) in the city's water agency, students have been asked to reduce costs over the next year and need to determine whether and to what extent to involve the 300 employees in the business unit.

1. To what extent should your employees be involved in this decision? Select one of the following levels of involvement:

Most teams will likely identify a medium high level of involvement (consult with the team), although some tend to suggest lower involvement (receive information from individuals or consult individuals only).

2. What factors led you to choose this alternative rather than the others?

This question can be answered by reviewing the four contingencies of employee involvement discussed in the textbook.

Decision structure: This decision has low structure. The scenario provides a situation that is relatively complex and require a variety of knowledge sources. Consequently, some level of involvement will be necessary.

Source of decision knowledge: This scenario states that you have limited knowledge relative to employees, and that even supervisors two levels below you lack sufficient details about the work to provide enough information. Therefore, it will be necessary to involve front-line employees. Furthermore, given the complexity of the business and dispersion of knowledge at the front lines, it is reasonable to argue that "receiving information from individuals" would be too low a level of involvement. the reason is that you would not know what information to request. Therefore, involvement probably needs to include describing the problem to employees. However, this medium-level involvement also carries risks because of the risks of conflict between employees and the company, discussed below.

Decision commitment. There isn't any direct information about employee commitment to decisions under various levels of involvement. However, since a moderate level of involvement is probably necessary (see above), this may be sufficient if any commitment is otherwise lacking.

Risk of conflict. There are two dimensions of this contingency. First, with respect to goal compatibility between employees and the company, this is a very high risk because the productivity dividend decisions may eventually have negative consequences for employees. The union clearly opposes the initiative and might encourage some employees to make decisions for their personal or union's benefit without consideration of other stakeholder needs (e.g. lower costs to consumers). Even if employees ignore the union's warnings, they might make decisions that work well for their unit but result in higher costs elsewhere in the organization. The scenario states: "employees may be unaware of or care little about these repercussions, because there is limited interaction with or social bonding by employees across the departments."

The second potential risk of conflict -- employees may have difficulty agreeing among themselves -- might occur because the unit has diverse employees with different skills and knowledge. It doesn't seem that this risk is very high, but it is a reasonable possibility. For example, some employees might suggest changes to another job group in the TD Group, which causes employees in the affected group to oppose that idea. Overall, the conflict among employee discourages high involvement, but will support a medium level of involvement.

3. What problems might occur if less or more involvement occurred in this case (where possible)?

A high degree of involvement is likely problematic because of the risk of conflict between employees and the organization's interests and with other work units in the organization. There may also be conflict among employees within the TD Group because some decisions may have adverse effects on specific subgroups in that unit.

A low level of involvement, including deciding alone and receiving information from individuals, would be too low due to your lack of knowledge about how to find ways to improve efficiency and even lack of knowledge about what questions to ask front-line staff on this matter. The business is too complex.

Scenario 2: The Sugar Substitute Research Decision

Situation: As head of research and development (R&D) at a major beer company, students are asked to determine whether and to what extent to involve the department's researchers in allocating budget for further research on a new sugar substitute into which one researcher has tentatively discovered.

1. To what extent should your employees be involved in this decision? Select one of the following levels of involvement:

Most teams will likely identify some level of consultation, although some tend to suggest high involvement (facilitate the team's decision). The answer to the next question explains why medium involvement is probably best here.

2. What factors led you to choose this alternative rather than the others?

This question can be answered by reviewing the four contingencies of employee involvement discussed in the textbook.

Decision structure: This decision has low structure. The incident says that there is a decision process for funding projects behind schedule, but there are no rules or precedents about funding projects that would be licensed but not used by the organization. Consequently, some level of involvement may be valuable.

Source of decision knowledge: The incident clearly says that the sugar substitute project is beyond your technical expertise and that it is difficult to determine the amount of research required. Scientists have information unavailable to the leader, but they would not have sufficient information to make the decision alone. Overall, this suggests that some involvement (consultation with individuals or the team) is desirable.

Decision commitment. This might be debatable, but most employees know that funding decisions are ultimately in the hands of executives who must take responsibility for those decisions. Also, it sounds like past funding decisions are made by the leader, not employees (mainly due to conflict problems described below). Moreover, employees don't implement anything as a result of this decision, so there is probably minimal adverse effect of low commitment.

Risk of conflict. There are two dimensions of this contingency. First, with respect to goal compatibility between employees and the company, the incident says that you believe that most researchers in the R&D unit are committed to ensuring company's interests are achieved. Second, it is almost certainly true that conflict will occur among employees. This is a win-lose situation where funding one project reduces or eliminates funding on other projects. Overall, the conflict among employees means that the decision should not be given to the team, but consultation with individuals or the team is fine.

3. What problems might occur if less or more involvement occurred in this case (where possible)?

A higher degree of involvement would probably be difficult because of the problem of conflict among employees. Employees could not agree because a decision to fund the project would reduce their own funding. A low level of involvement would lose some of synergy of discussion about the issue. This synergy brings out valuable information and potentially more creative solutions to the problem.

Scenario 3: Coast Guard Cutter Decision Problem

Situation: Students are placed in the role of a captain of a Coast Guard cutter who is searching for a plane that has crashed offshore. After 20 hours of searching, a major storm is approaching and the captain must decide whether to abandon the search or to continue and place the ship at risk. Students must determine whether and to what extent to involve the crew in the decision.

1. To what extent should your employees be involved in this decision? Select one of the following levels of involvement:

The preferred level of involvement is “Decide alone” (no involvement). Specifically, the captain would solve the problem or make the decision him/herself using information available at the time.

2. What factors led you to choose this alternative rather than the others?

This question can be answered by reviewing the four contingencies of employee involvement discussed in the textbook.

Decision structure: This decision probably has high structure because the captain must ultimately protect the ship and crew, or would have reasonably clear rules on taking this sort of risk.

Source of decision knowledge: The captain has as much information as anyone on the ship about which option to select.

Decision commitment. The crew will likely support the captain’s decision without any involvement.

Risk of conflict. There is a reasonable possibility that crew members will be divided (i.e., conflict will occur) over the preferred alternative.

3. What problems might occur if less or more involvement occurred in this case (where possible)?

The main problem with applying a higher level of employee involvement here is that the problem is well structured and the time-consuming process may be redundant. There is also a chance that subordinates would engage in dysfunctional conflict if they were asked to make the decision.

Scenario 4: Social Media Policy Decision

Situation: Students are placed in the role of head of the state government’s industry initiatives agency. Comments from potential applicants have led you to consider having a social media policy in the agency, particularly to have work-related sites they can access and develop during work hours. Students are asked to determine whether and to what extent employees should be involved in forming a social media policy within the agency.

1. To what extent should your employees be involved in this decision? Select one of the following levels of involvement:

Most teams will likely identify a medium high level of involvement (consult with individuals and/or the entire agency).

2. What factors led you to choose this alternative rather than the others?

This question can be answered by reviewing the four contingencies of employee involvement discussed in the textbook.

Decision structure: This decision has low structure because there is no existing standard policy in the state government or even within the department to which the agency reports. Consequently, some level of involvement will likely to be valuable.

Source of decision knowledge: The scenario reveals that although you are interested and intrigued by the potential of social media, you lack sufficient information relative to the professionals in your agency, particularly younger staff. It is unclear whether you have enough information about social media to ask others for specific information.

Generally, some level of involvement is required, possibly at least telling others about the problem (need for a policy).

Decision commitment. It is apparent that some people strongly support (and current have) social media at work, whereas others are opposed. Involving people in the social policy decision to some degree might increase support for the final decision because at least everyone has had their voice heard on this matter. Therefore, most students would likely suggest that the agency head needs to tell the problem to others and consult as many people as possible (individually, possibly in groups).

Risk of conflict. There are two dimensions of this contingency. First, conflict will almost certainly occur among employees because the scenario describes opposing views. Some actively use social media and support it, whereas others are apparently strongly opposed to the activity in the workplace. As such, the final decision must rest with the agency head (the highest level of involvement is excluded). Regarding the second risk of conflict, it is unclear whether there will be goal compatibility between employees and the agency or state government. However, the first conflict precludes the highest involvement even if employees would decide in the agency's best interests. Overall, the conflict among employees discourages high involvement, but will support a medium level of involvement involving consultation with individuals and possibly at a group level.

3. What problems might occur if less or more involvement occurred in this case (where possible)?

Due to the risk of conflict among employees, a high degree of involvement (facilitate the team's decision) would likely result in no decision due to lack of agreement.

A low level of involvement -- where the agency heads asks specific employees for information without describing the issue -- may be possible, but carries two risks. First, the agency head might not have enough knowledge to know what information to request. Second, there is a risk of lack of employee commitment because the issue is polarized. Giving everyone an opportunity to present their views may increase acceptance of the decision whichever way it goes.



TEAM EXERCISE: WHERE IN THE WORLD ARE WE?

Purpose

This exercise is designed to help students to understand the potential advantages of involving others in decisions rather than making decisions alone.

Materials

Students require an unmarked copy of the map of the United States of America and a scoring sheet that includes names of communities in the United States, both of which are provided on the next two pages of this instructor's guide. Students are not allowed to look at any other maps or use any other materials. After students have individually and in teams estimated the locations of communities, the instructor will also provide copies of the answer sheet (see four pages forward in this manual).

Instructions

Step 1: Working alone, students estimate the location on the U.S. map the location of the communities listed. All of the communities listed are found in the U.S. For example, they would mark a small "1" in Exhibit 2 on the spot where

they believe the first community is located. They would mark a small “2” where they think the second community is located, and so on. Students need to number each location clearly and with numbers small enough to fit within one grid space.

Step 2: The instructor will organize students into approximately equal sized teams (typically 5 or 6 people per team). Team members should reach a consensus on the location of each community listed in Exhibit 1. The instructor might provide teams with a separate copy of this map, or each member can identify the team’s numbers using a different collared pen on their individual maps. The team’s decision for each location should occur by consensus, not voting or averaging.

Step 3: The instructor will provide or display an answer sheet, showing the correct locations of the communities. Using this answer sheet, students will count the minimum number of grid squares between the location they individually marked and the true location of each community. Students then write the number of grid squares in the second column of the scoring sheet, then add up the total. Next, they count the minimum number of grid squares between the location the team marked and the true location of each community. They should then write the number of grid squares in the third column, then add up the total.

Step 4: The instructor will ask for information about the totals and the class will discuss the implication of these results for employee involvement and decision making.

Comments to Instructors

This exercise demonstrates the importance of employee involvement for better decision making. Generally, teams make better decisions than do individuals working alone. This is reflected by a “Team Score” that is usually lower than the “Individual Score.” This is particularly true in this exercise because students typically have varied backgrounds in terms of where they have lived or where their families live. Students currently in Montana might easily locate Missoula but not Carrizozo.

The discussion should focus on the reasons why groups tend to make better decisions. Specifically, team members bring diverse knowledge to the decision process, so the collective decision is usually more accurate than the typical individual’s decision. The class should also explore why some individuals score lower than the team. Students will usually point out that they were unsure of their knowledge, so did not push their point of view. Occasionally (but not often stated in class), individual students dominate the discussion, thereby preventing more knowledgeable students from presenting their information.

COMMUNITIES IN THE UNITED STATES

[Note: These names are NOT jumbled. This is how they are spelled. The names are not listed in any particular order.]

1. AYDEN

2. CARRIZOZO

3. HEALDTON

4. MORRILTON

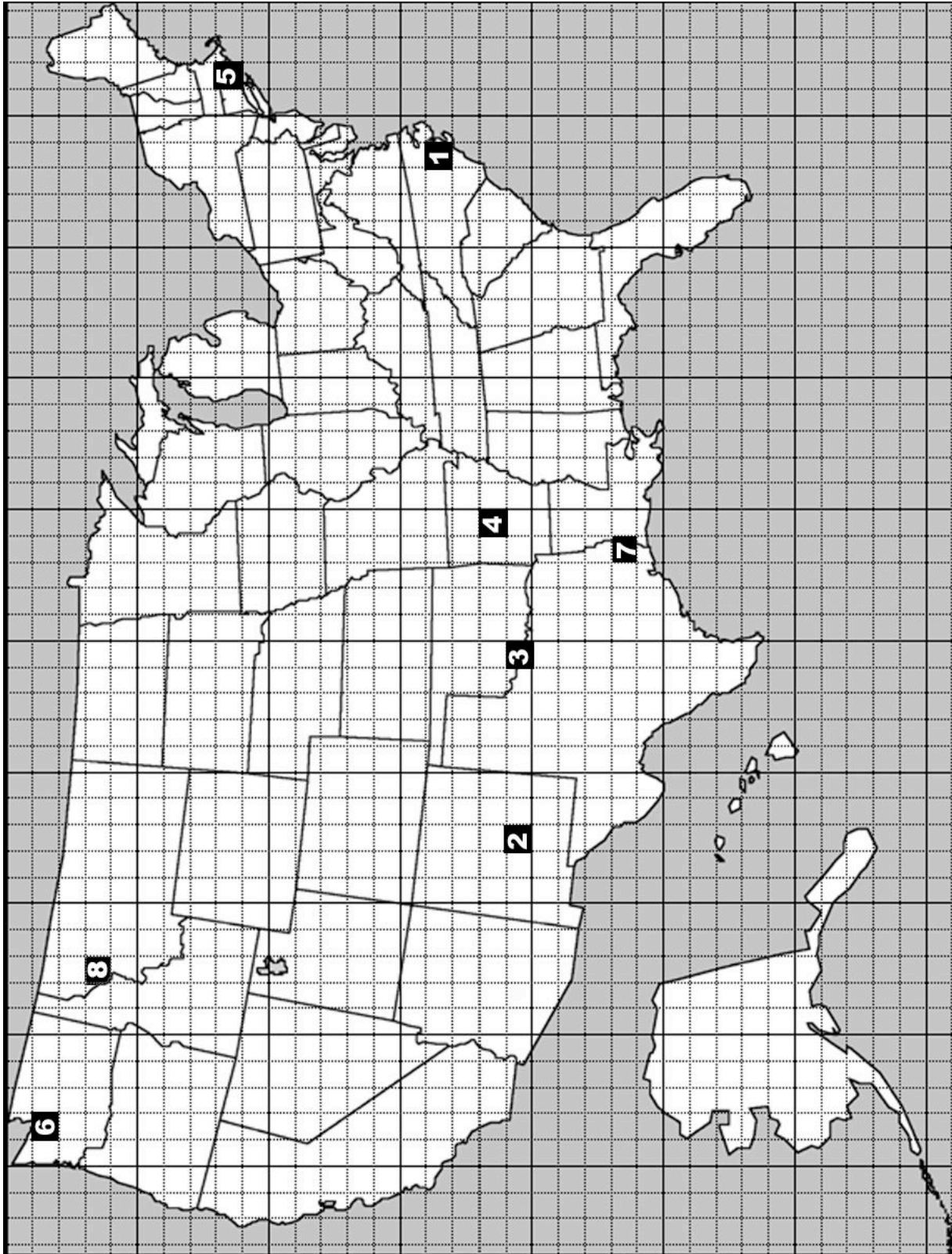
5. TIVERTON

6. TUMWATER

7. VIDOR

8. MISSOULA

Student Handout: Answer to “Where in the World Are We?”





CLASS EXERCISE: HOPPING ORANGE EXERCISE

Purpose

This exercise is designed to help students understand the dynamics of creativity and team problem solving.

Instructions

Students are placed in teams of six students. One student serves as the official timer for the team and must have a watch, preferably with stop watch timer. The instructor will give each team an orange (or similar object) with a specific task involving use of the orange. Each team will have a few opportunities to achieve the objective more efficiently.

The instructor will read the following instructions. These instructions ARE NOT provided in the textbook so students have not had an opportunity to think about the exercise beforehand.

“The task for this exercise is to have each team member individually handle the orange -- toss to each other, or anything you want -- but the orange must end up in the hands of the person who first held it. This is a timed exercise. The winning team accomplishes the task in the shortest length of time. You will have a few trials to improve your speed.”

Comments for Instructors

This quick exercise works best if you avoid cueing students about the possibility of rolling or dropping the orange. The title and instructions create a mental model that assumes team members should toss the orange from one person to the next. In fact, this is not the most efficient method and the exercise does not limit the method in which all team members touch the orange.

The most efficient way to satisfy the requirements of this exercise is to have team members use their hands to create a vertical tube. They should each have a few fingers sticking into the tube. Then, one person drops the orange through the tube so that it touches everyone and the person's other hand is at the bottom of the tube to catch it.

If there are some doubts about the meaning of “handle the orange”, then a second strategy is to create a slide for the orange. The slide consists of the cupped hands of five of the six team members held together so that the orange is rolled from the top set of hands to the bottom. The sixth person drops the orange onto the slide, then runs to the other end to catch it as it rolls down.

Although balls or other round objects may be used, an orange or other semi-round fruit or vegetable (e.g. apple, lemon, potato) works best because students quickly identify balls with rolling. They are less likely to break out of the mental model of tossing where fruit or vegetables are involved.



CLASS EXERCISE: CREATIVITY BRAINBUSTERS

Purpose

This exercise is designed to help students understand the dynamics of creativity and team problem solving.

Instructions

This exercise may be completed alone or in teams of three or four people, although the latter is more fun. If teams are formed, students who already know the solutions to these problems should identify themselves and serve as silent observers. When finished (or time is up), the instructor will review the solutions and discuss the implications of this exercise. In particular, be prepared to discuss what you needed to solve these puzzles and what may have prevented you from solving them more quickly (or at all).

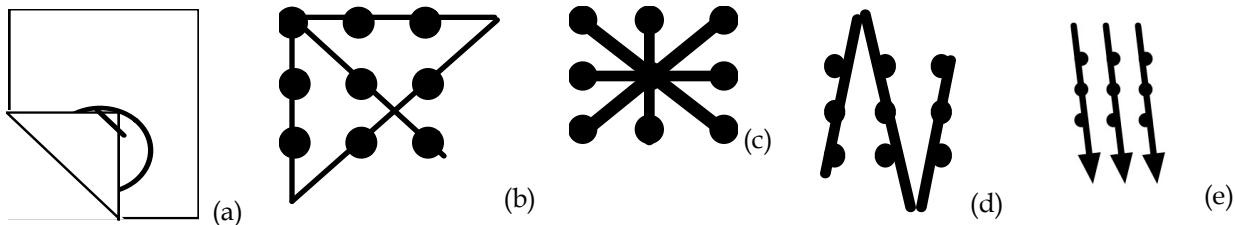
Comments for Instructors

[NOTE: The PowerPoint file for this chapter includes slides that visually display the answers to these creativity brainbusters.]

Double Circle Problem. I have found that students are usually dumbfounded and don't even try. How can you draw two circles with one line and no connection between them? Here's the answer: Draw the outer circle anywhere on the page. When finished, fold a corner of the paper over so that it lies on top of the circle and the paper edge is beside your pencil (see exhibit (a) below). Move the pencil across this folded over edge to a point inside the circle you just drew. Move the corner back to its original position and complete the second circle.

Nine Dot Problem. (Note: This is sometimes known as the Eskimo puzzle because Inuit people apparently have less trouble solving them. The reason is that they have no fences, so their brain doesn't restrict their solutions within the area of the dots.) There are many ways to solve this puzzle. The first solution below (Exhibit (b)) is the most common. Solution (c) is somewhat questionable because the pencil doubles back across existing lines. Some might say that there are more than four lines, although we see only four lines.

Nine Dot Problem Revisited. Some students will figure out the nine dot problem with four lines. Fewer will figure out the three line solution. The most obvious solution is shown in (d) below. Now, ask students for a solution with FEWER than three lines. There are a few ways of doing this. Draw nine large dots on a very large piece of paper, then roll the paper into a large tube. Next, draw a single line on a slight angle from the top of one column of dots down and around the tube to the middle row, then around the tube again to the third column of dots. The result is shown in the third illustration below. If students suggest that this method would not cover the dots correctly, you could suggest that the paper could be so large that the angle becomes asymptotically minuscule. Also, you could keep the paper flat and draw a straight line twice around the Earth. Another way to pass a pencil line through all dots with a single straight line is to make the line wide enough to cover all of the dots. Some students might also consider folding the paper so that the dots are folded on top of each other. Then punch a hole with your pencil through all of the dots. It would be an unusual line, but it seems to fit within the protocol!



Word Search Problem. The trick here is to correctly interpret the meaning of the instructions. May people tend to look for five letters that they can cross out. Instead, they should cross out the words “five letters” that are embedded in the row of letters. This leaves the word “creative.” [Note: This exercise is fairly new, so it may be possible that students can cross out any five letters in the sequence to form a single word. However, we have not yet found this option.]

Burning Ropes. This is a real challenge to most students in my class, but a few people get the solution. At time 0, light BOTH ends of one rope and one end of the second rope. The first rope will necessarily burn up in 30 minutes. When this is done, light the second end of the second rope. With 30 minutes of the second rope burned up, burning both ends of the remainder will take exactly 15 minutes. Some students suggest cutting the rope in half, but they forget that burn time is not equal across the rope. If you cut a rope in half and burn both ends of each, one might burn for five minutes and the other for 25 minutes (not necessarily 15 minutes each).

Bonus Brainbuster

Roman Numeral Problem. Draw the roman numbers “IX” (without quote marks) on an overhead or whiteboard. Then say to students: “Here is the Roman numeral 9. Add only one line to create a six.”

Answer to Roman Numeral Problem: This puzzle can be solved by drawing an “S” in front of the “IX”. Alternatively, the solution could simply be to draw a “6”, because this a single line, too. A third solution requires a wide marker the same color as the paper on which the IX is written. Turn the paper upside down (so you see an XI). Now, draw a straight line across the bottom half of the two Roman numerals (thereby hiding them against the paper background). The result shows the Roman numeral “VI”.



SELF-ASSESSMENT: DO YOU HAVE A CREATIVE PERSONALITY?

Purpose

This self-assessment is designed to help you to measure the extent to which you have a creative personality.

Overview and Instructions

This instrument estimates the student’s creative potential as a personal characteristic. The scale recognizes that creative people are intelligent, persistent, and possess an inventive thinking style. Creative disposition varies somewhat from one occupational group to the next.

This self-assessment consists of an adjective checklist with 30 words. Students are asked to put a mark in the box beside the words that they think accurately describe them. They MUST NOT mark the boxes for words that do not describe them. Students need to be honest with themselves to receive a reasonable estimate of their creative personality.

Feedback for the Creative Personality Measure

The table on the right (and applied to the graph in the student CD) is based on norms for undergraduate and graduate university students in the United States. Scores range from -12 to +18. People with higher scores have a higher creative personality.

| Score | Interpretation |
|------------|------------------------------|
| +10 to +18 | High creative personality |
| +1 to +9 | Average creative personality |
| -12 to 0 | Low creative personality |